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NOTES AND LITERATURE

GENERAL BIOLOGY

Iron and Living Matter.[1] — The title together with the first paragraph of the preface gives a fairly correct idea of the contents of this book. A somewhat free translation of the paragraph referred to is as follows: In the course of my bacteriological and morphological studies I, like so many other observers, felt myself simply overpowered with the infinite variety of the vital phenomena and felt an almost irresistible necessity to gather all these phenomena together under some one fundamental principle. In the course of my attempts to find such a principle I came finally to the conclusion that all vital phenomena are due in the last instance to the oxidation of the iron of living matter.

One scarcely feels like taking the author's discussions of the vital phenomena and their causes seriously because they seem so much more like the dreamy wanderings of an imaginative but untrained mind than like a scientific presentation of a coherent set of facts. It is not clear just why or how the author came to decide upon the oxidation of iron as being the one fundamental process back of the life phenomena. He states in the preface that what helped more than anything else to fix this view in his mind was the fact that he had succeeded in explaining by means of it all the enzyme reactions. Indeed the only *experimental* work recorded in the book is that which is intended to prove that the characteristic enzyme reactions are nothing more or less than the effects of oxidations and reductions of the iron which they are supposed to contain.

The experimental work which is supposed to prove this surprising result consists simply of qualitative tests for iron and phosphoric acid in Merck's commercial enzyme preparations! The author does not seem to understand that the occurrence of traces of iron and phosphorus in commercial enzyme preparations may be only impurities and not a part of the active enzyme, nor does he seem to know that enzymes have been the subject of considerable careful investigation during the past fifteen years and that their nucleoproteid nature which he has just "discovered" is now in fact being given up by the men who are most prominent in the chemistry of the enzymes. Only a few months ago Pekelharing prepared a pepsin which contained no phosphorus ; this pepsin still contained a minute trace of iron, as shown by qualitative tests, but it was too small to be determined quantitatively and Pekelharing paid no further attention to it. There is no reason for supposing that Pekelharing could not purify this pepsin still further and thus get rid of the last traces of iron, as he has already removed the last traces of phosphorus, should there be any sufficient object in his doing so.

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[1] Sacharoff, U. *Das Eisen als das thätige Prinzip der Enzyme und der lebendigen Substanz.* Translated into German by Dr. M. Rechtsamer in Odessa. Jena, Fischer, 1902. 8vo, 83 pp., 2 pls.

Since the only experimental evidence cited by the author is thus meaningless there is scarcely any point in following him in a review of this kind through other subjects, such as synthesis of living matter, growth, cell division, reproduction, muscle contraction, the activity of the sense organs, and the chemical processes of the central nervous system. The discussions seem all like the products of a wandering mind whose scientific bearings have been completely lost.

It seems surprising that a firm like that of Gustav Fischer at Jena could have been induced to publish a work of this kind.

O. F.

A New Laboratory Manual of Biology. — The teacher of biology is confronted not only with the problems of his own science, but with those of how best to teach it, and a laboratory manual is a provisional answer to many questions of the second kind. From this standpoint Hargitt's[1] *Outlines* will be of much service to teachers. It abandons the older method of beginning with the simplest representatives of animals and plants which are at the same time least familiar and most difficult of study, and adopts the more recent practice of introducing the subject by well-known types, in this instance the frog and the fern. Then follow exercises on the animal and the vegetable cell, and finally a series of type animals and plants ranging from hydra and the molds to the grasshopper and flowering plants. The mingling of plants and animals in the latter part of the work, though a time-honored practice, destroys the unity which the plant and the animal kingdom ought to show and substitutes nothing of special value for it. The text, which is for the most part clear, is

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[1] Hargitt, C. W. *Outlines of General Biology.* C. W. Bardeen, Syracuse, N.Y. 164 pp.